



# Mercury in Artisanal and Small-Scale Gold Mining



ASGM mining in Indonesia 2009.

Photo credit: Susan Egan Keane, NRDC.

Mercury is used to extract gold from ore by forming a mercury-gold mixture. Heating the mixture evaporates the mercury leaving only gold. This mercury-based process is currently favored by small-scale miners over other methods of gold extraction because it is inexpensive, accessible, simple to use, and allows miners to produce gold quickly, often in a single day. Artisanal and Small-Scale Gold Mining (ASGM) in developing countries is the largest use of mercury in the world.

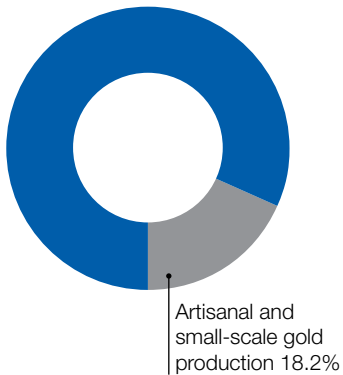
## Human and Environmental Health

In contrast to other industrial uses, nearly all of the mercury used in ASGM is eventually released directly into the environment. Released mercury first contaminates the local atmosphere, soils and waterways exposing miners and their communities to serious health risks. Mercury released into air can also travel long distances, endangering lakes, streams, and soils all around the world.

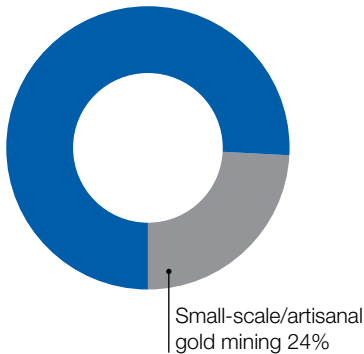
## Poverty Relief

ASGM provides an important opportunity for poverty relief, especially in rural communities. Mining incomes are often 2-4 times higher than incomes from typical agricultural activities in the same region. The ASGM sector has been estimated to provide a primary source of income for 10 to 20 million miners in over 70 countries, and indirectly supports 50 to 100 million people worldwide; with sharply increasing gold prices attracting more miners, this number is likely on the rise.<sup>1</sup>

## Sources of Mercury Emissions



## How Mercury Is Used



## Solutions

There are simple and effective alternative practices that can be implemented immediately to substantially reduce mercury use and exposure. These include eliminating the worst practices in ASGM, where mercury is either unnecessary or wasted, such as (1) whole ore amalgamation; (2) open burning of amalgam without use of retort or other mercury vapor capture systems; and (3) the use of cyanide after mercury amalgamation, or in processing mercury-rich tailings without first removing mercury. In some cases, mercury-free alternatives may be feasible. To facilitate the elimination of mercury-intensive practices, and the adoption of low mercury and mercury-free alternatives, restrictions on mercury supply are needed to increase the incentive for mercury use reduction and stewardship. In addition, the legal and economic structure for small-scale gold miners may need revision in some countries in order to obtain the required cooperation and investment.

## Treaty Control Measures

The treaty should restrict the global supply and trade of mercury, making it less available and attractive to miners. The treaty should also mandate the creation of country-specific ASGM mercury reduction goals tailored to the specific environmental, social, and economic characteristics of their ASGM operations and communities. These mercury reduction goals should, at a minimum, seek to eliminate the worst ASGM practices, lower mercury, and where feasible, mercury-free alternatives should be promoted.

<sup>1</sup> Telmer K.H and Veiga M.M. (2009) World emissions of mercury from small scale and artisanal gold mining. In: *Mercury Fate and Transport in the Global Atmosphere Emissions, Measurements and Models; Part of the UNEP Mercury F&T Partnership*, Pirrone, Nicola; Mason, Robert (Eds.); Springer, 637 p.